

# **Proposed Amendment: Tables of Maximum Incremental Reactivity (MIR) Values**

**Reactivity Research Advisory Committee**

**August 28, 2007**

**Sacramento, California**

**California Environmental Protection Agency**

---



**Air Resources Board**

# Aerosol Coating Products Regulation

- 2000: Board approved amendments to the Aerosol Coating Products Regulation
- Also approved new subchapter with MIR values
- Reactivity limits (effective 2001) for 36 coating categories based on MIR scale

# Board Directive to Executive Officer

- Review MIR values every 18 months
  - Revise if necessary
- Amendments to update MIR values, conducted thru Exec. Officer public hearing

# Using the MIR Values

- MIR values (2000) used to calculate Product-Weighted MIR (PWMIR) values for aerosol coatings
- MIR values for aerosol coatings unchanged until June 1, 2007
- Only the MIR values for new compounds added to the existing tables can be used in aerosol coatings prior to June 1, 2007

# 2000 Tables of MIR Values

Based on earlier work by Dr. Carter (UCR)

- Section 94700: MIR values for almost 700 individual VOCs or mixtures
- Section 94701: MIR values for 24 classes of hydrocarbon solvents

# 2003 Tables of MIR Values

Based on work reported by Dr. Carter in 2002

- Section 94700: MIR values for almost 800 individual VOCs or mixtures
- Section 94701: MIR values for 24 classes of hydrocarbon solvents (unchanged)

# MIRs, Sec 94700: 2003 vs 2000

- 102 new compounds with MIR values added to Section 94700 of CCR
- 14 existing VOCs: updated MIR values
  - MIR values changed by  $> 5\%$
- No changes to Section 94701

# Why Amend MIR Values?

- Board resolution: review tables every 18 months
- Last amended in December 2003
- Regulations should be based on “best science”
- Dr. Carter’s research: significant change for some MIR values due to new SAPRC-07 mechanism
- Hundreds of VOCs added to SAPRC mechanism, and also MIR tabulation



# Section 94700 & 94701 Changes

- Add hundreds of new VOCs or mixtures
- Continued use of Upper Limit Estimates
- Revised column for MIR value
- Review of bin values for hydrocarbon solvents
  - New solvents
  - Impacts of new MIR values on bin system

# Scientific Basis for the Proposal

- Dr. Carter's review of MIR values
  - >1500 experiments
  - Major revision of the chemical mechanism (from SAPRC-99 to SAPRC-07)
  - Additions/changes: chlorine chemistry, aromatic mechanisms, PM prediction
  - Explicit mechanisms for >700 VOC types

# Scientific Basis for the Proposal

## (Continued)

- Hundreds of VOCs or mixtures added; now ~1100 VOCs or mixtures. More?
  - Overall, MIR values changed by ~10%
  - But, 35 VOCs changed by >35%
  - And, 5 VOCs changed by a factor of 2

# Scientific Reviews

- Research Screening Committee approved Dr. Carter's draft final report (SAPRC-07)
- Contracts to evaluate SAPRC-07, by independent distinguished scientists
- Reactivity Scientific Advisory Committee will review scientific basis of the proposal

# Environmental Impacts

- California Environmental Quality Act (CEQA) requires evaluation of impacts
  - Particulate Matter (PM)
  - Global Warming
  - Stratospheric Ozone Depletion
  - Water Quality & Landfill Loading
  - Increased Use of Toxics
  - Tropospheric Ozone Concentrations

# Economic and Other Impacts

- Evaluate economic impacts on existing products
- Other reactivity-based regulations
  - Low-Emission Vehicle/Clean Fuel regulation
  - Future reactivity-based regulations for other source categories
- Environmental Justice

# Time-Line

- Dr. Carter's Report & RRAC meeting - today
- Additional VOCs? – due September 14
- Peer Review of SAPRC-07 Mechanism, Reactivity Scientific Advisory Committee review, and Final MIR Values - December 2007
- ARB Staff's Draft Proposal – early 2008
- ARB Staff Report – March 2008
- ARB Governing Board hearing – June 2008
  - with hearing for consumer product regulation

# Summary

- Board requirement to periodically review reactivity-based regulations
- Dr. Carter's review shows the need for significant changes
- June 2008 Board Hearing for proposed amendments to tables of MIR values; coordinated with consumer product regulatory review



# Reminder

If you suggest candidates by September 14,  
Dr. Carter may develop MIR values for:

- Additional VOCs?
- New solvents?

# Contact us

- Ralph Propper: [rpropper@arb.ca.gov](mailto:rpropper@arb.ca.gov),  
(916) 323-1535
- Dongmin Luo: [dluo@arb.ca.gov](mailto:dluo@arb.ca.gov),  
(916) 324-8496
- Website:  
[www.arb.ca.gov/research/reactivity/reactivity.htm](http://www.arb.ca.gov/research/reactivity/reactivity.htm)